Service Manual

802
802.4
802 *Super*

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General Information 1
Care & Safety 2
Routine Maintenance 3
Attachments A
Body & Framework B
Electrics C
Controls D
Hydraulics E
Gearboxes F
Track & Running Gear J
Engine L

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Contents **Page No.**

Identification	1 - 1
Storing the machine	1 - 2
ROPS, TOPS and FOGS	1 - 3
Introduction	2 - 1
Before entering the cab	2 - 1
Entering/exiting the cab	2 - 2
Cab	2 - 3
Opening the windscreen	2 - 4
Opening the sidescreen	2 - 4
Heater controls	2 - 5
Seat	2 - 6
Seat belt (when fitted)	2 - 6
Engine and track controls, Switches and instruments	3 - 1
Track controls	3 - 2
Engine controls	3 - 3
Switches	3 - 4
Instruments	3 - 6
Dozer controls	4 - 1
Excavator controls	4 - 2
Changing the Excavator Control Pattern	4 - 3
Slew cab	4 - 4
Swing boom	4 - 5
Boom swing stop	4 - 6
Raise / Lower boom	4 - 7
Dipper	4 - 8
Bucket	4 - 8
Refuelling the machine	4 - 8
Before starting the engine	5 - 1
Starting the engine	5 - 1
Jump starting the engine	5 - 2
Cold climate warm up	5 - 3
Operating in high / low temperatures	5 - 3
Stopping and parking the machine	6 - 1
Preparing for road / site travel	6 - 2
Getting the machine moving	6 - 3
Working with the dozer	7 - 1
Working with the excavator	
Working on a slope	7 - 1
Digging	7 - 2
Moving the Machine While Digging on the Level	7 - 3
Digging near walls	7 - 3
Lifting Regulations and Safe Working Loads	7 - 4
Using the attachments and site safety	7 - 5
Moving a disabled machine	10 - 1
Transporting the machine	10 - 2
Securing for Transport	10 - 2
Service Tools	11 - 1
Sealing and Retaining Compounds	13 - 1

MidWestTech | JCB 802, 802 Super, 802.4 Mini Excavator Service Manual | Publicatio... Order the manual at mid-west-tech.com >

Contents **Page No.**

Safety Notices ..... 1 - 1

General Safety ..... 2 - 1

Operating Safety ..... 3 - 1

Maintenance Safety ..... 4 - 1

MidWestTech | JCB 802, 802 Super, 802.4 Mini Excavator Service Manual | Publicatio... Order the manual at mid-west-tech.com >

Contents **Page No.**

Lubricants and Capacities	1 - 1
Engine Lubrication Chart	1 - 2
Lubricants - Health and Safety	1 - 3
Torque Settings	1 - 4
Hydraulic Fittings and Torque Settings	1 - 5
Service Schedule	2 - 1
Greasing	3 - 1
Fuel System	4 - 1
Cooling System	5 - 1
Fan belt adjustment	5 - 3
Fan belt removal and replacement	5 - 4
Oil Filter	6 - 1
Air Filter	7 - 1
Hydraulic Filter	8 - 1
Track Gearbox	9 - 1
Battery	10 - 1
Warning Symbols	10 - 1
First Aid - Electrolyte	10 - 2
Checking the Electrolyte Level	10 - 2

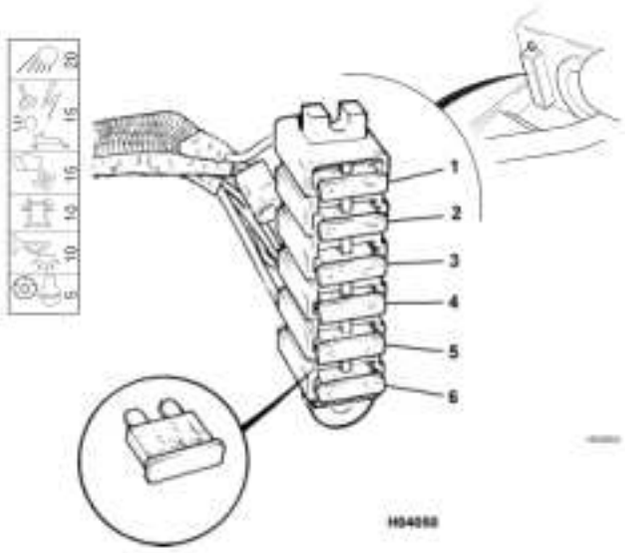
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* Circuit Protection (Continued)

802 Super machines upto M733847

The electrical circuits are protected by fuses located in the heater unit to the right of the seat.

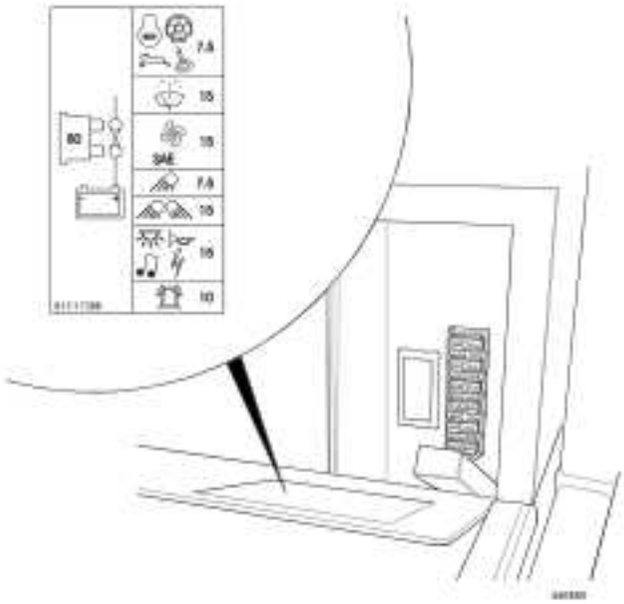
Fuse	Circuit	Rating
1	ESOS, Buzzer , Instruments	5A
2	Interior Light, Horn	10A
3	Beacon	10A
4	Heater blower, Wiper	10A
5	Slew/Swing operation, Pilot solenoid 2 speed, Boom light, Auxiliary power	15A
6	Working lights	20A
-	Main Fuse (Fast start glow plugs)	60A



802 Super machines from M733848

The electrical circuits are protected by fuses. The secondary fuses are located in the toolbox under the seat. The primary fuse is located in the battery compartment, below the cab door.

Fuse	Circuit	Rating
1	Instruments, ESOS, Two-speed circuit, Servo solenoid	7.5A
2	Wash/Wipe circuit	15A
3	Slew/Swing circuit, SAE control, Heater blower	15A
4	Boom light	7.5A
5	Work lights	15A
6	Interior Light, Horn, Radio, Accessory power socket	15A
7	Beacon	10A
-	Primary Fuse	80A



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Technical Data

General

	802	802.4, 802 Super
Model	KH 103-13 IDI	KE103-15 IDI
Type	Vertical in-line, 3 cylinder, normally aspirated, 4 stroke, water cooled diesel.	Vertical in-line, 3 cylinder, normally aspirated, 4 stroke, water cooled diesel.
Swept Volume	1.330 litre (81.16 in^3)	1.496 litre (91.29 in^3)
Power Output	17.2 kw (23.1 hp)	20.9 kW (28 hp)
Bore	84 mm (3.31 in.)	84 mm (3.31 in.)
Stroke	80 mm (3.15 in.)	90 mm (3.54in.)
Firing Order	1 - 2 - 3	1 - 2 - 3
Valve Clearance (cold)	0.2 mm (0.008 in.)	0.2 mm (0.008 in.)
Compression Ratio	23:1	22.5:1
Compression Pressure	29.4 bar (30 kgf/cm^2, 427 lbf/in^2)	29.4 bar (30 kgf/cm^2, 427 lbf/in^2)
Injection Pump Timing	21.5° - 23.5° B.T.D.C.	22° - 23° B.T.D.C.
Injector Setting	152 - 161.7 bar (155 - 165 kgf/cm^2, 2204 - 2346 lbf/in^2)	152 - 161.7 bar (155 - 165 kgf/cm^2, 2204 - 2346 lbf/in^2)
Oil Capacity	4.5 litres (0.99 U.K. gallons)	4.5 litres (0.99 U.K. gallons)
Oil Pressure	1.7 - 4.1 bar (1.8 - 4.2 kgf/cm^2, 25 - 60 lbf/in^2)	1.7 - 4.1 bar (1.8-4.2 kgf/cm^2, 25-60 lbf/in^2)
Weight (dry)	125 kg (275 lb)	135 kg (297 lb)
Idling Speed	1100 rev/min.	950 - 1100 rev/min (see TI 116)
Max No load Speed	2750 rev/min.	2700 rev/min.

Torque Settings	Nm	kgf m	lbf ft
Cylinder Head Bolts	88 to 93	9.0 to 9.5	65 to 69 oiled
Connecting Rod Nuts	49 to 54	5.0 to 5.5	36 to 40
Flywheel Bolts	58 to 68	6.0 to 7.0	43 to 51
Injector Nozzle	59 to 69	6.0 to 7.0	44 to 51
Main Bearing Bolts	24.5 to 29.4	2.5 to 3.0	18 to 22
Big-end Bearing Bolts	49 to 54	5.0 to 5.5	36 to 40
Cooling Fan Bolts	9 to 12	1.0 to 1.2	7 to 9

Camshaft and timing Gears

Cam Height (inlet and exhaust)	(new)	34.065 to 34.12 mm (1.341 to 1.343 in.)
	(service limit)	33.7 mm (1.327 in.)
Cam Height (injection pump)	(new)	41.94 to 42.06 mm (1.6512 to 1.6559 in.)
	(service limit)	41.8 mm (1.6457 in.)
Cam Height (fuel feed pump)	(new)	31.9 to 32.0 mm (1.2559 to 1.2598 in.)
	(service limit)	30.0 mm (1.1811 in.)
Timing Gear Backlash	(new)	0.08 mm (0.003 in.)
	(service limit)	0.25 mm (0.010 in.)

***802.4 Super**
High idle speed - 2420 rev/min. +/- 25 rev/min.
Low idle speed - 1050 rev/min. +/- 50 rev/min. to achieve smooth running on mounts.

Do Not adjust high idle engine speed, this is an EPA compliant engine, Seek advice for engines not running within this tolerance.

MRV- P1 140 bar +/- 5
MRV- P2 200 bar +/- 5
MRV- P3 200 bar +/- 5
ARV 140 bar & 46 litres/min.

Refer to Perkins manual 9806/2100 for further information.

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Piston and Connecting Rods

Removal, Inspection and Replacement

Removing

1 Drain the coolant.

2 Drain the engine oil.

3 Remove the cylinder head assembly.

4 Remove the oil sump, suction pipe and strainer.

5 Remove the big-end nuts **F** and bolts **G** and remove the big-end cap **H.**

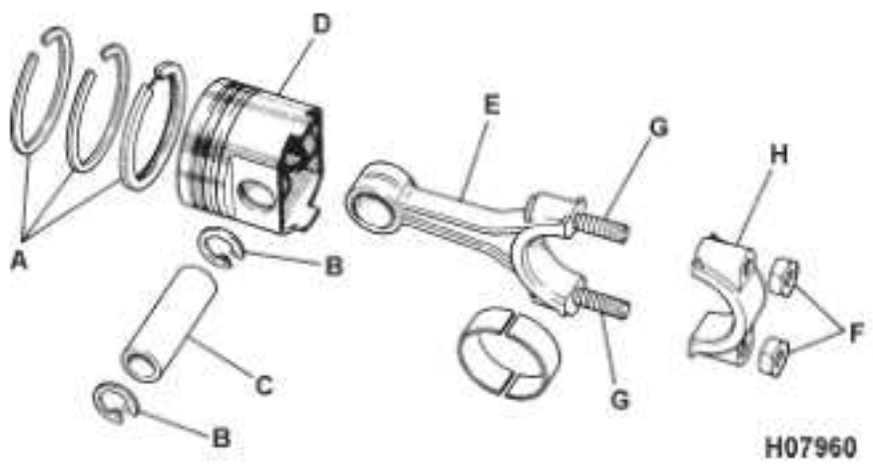
6 Remove any carbon from the cylinder bore. Push the piston and connecting rod through the cylinder block.

7 Refit the big-end cap on the removed piston and connecting rod. Attach a label to each of these assemblies to ensure replacement in the original bore.

8 Remove the piston rings **A.**

9 Remove the circlips **B** and drive out the gudgeon pin **C.**

10 Repeat for each cylinder.



H07960

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EXCAVATOR CONTROLS - Continued

WARNING

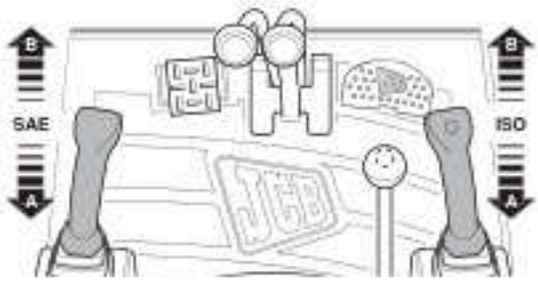
Thoroughly warm the hydraulic oil before operating the excavator services. To ensure smooth boom operation damping is incorporated into the boom lift circuit, this means when boom raise is released, the boom may continue to rise for a fraction of a second. Before selecting boom up, check there are no overhead obstructions or electric power cables.

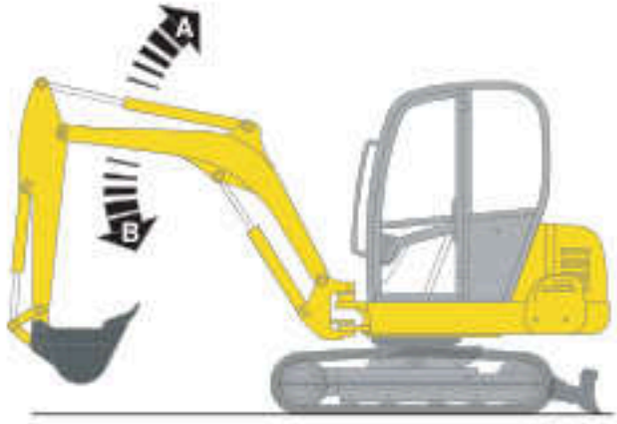
HOP40

CAUTION

The boom service is operated by the R.H. controller on standard ISO control machines or by the L.H. controller on the optional SAE control pattern machines.

HOP41





A706810

RAISE BOOM

To raise the boom pull the respective controller backwards **A**.

Release the controller when the boom has reached the desired position. The boom ram incorporates damping at the limit of boom raise, reducing the speed of the ram, eliminating shock loadings.

BOOM BOOST

Partial selection of the controller will limit the speed of boom raise. Boom Boost is automatically engaged when controller is fully selected.

LOWER BOOM

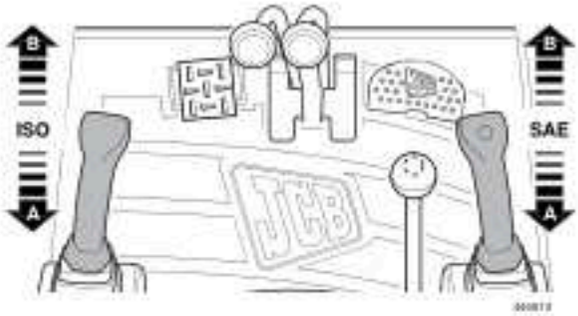
To lower the boom, push the respective controller forwards **B**.

Release the controller when the boom has reached the desired position.

CAUTION

The dipper service is operated by the L.H. controller on standard ISO control machines or by the R.H. controller on the optional SAE control pattern machines.

HOP42





DIPPER IN

To bring the dipper in, pull the respective controller backward **A**. Release the controller when the dipper is at the desired position.

DIPPER OUT

To push the dipper out, push the respective controller forward **B**. Release the controller when the dipper is at the desired position.

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MOVING A DISABLED MACHINE

CAUTION

Do not tow a disabled machine. Permanent damage to the track motors will occur if the machine is towed.
HOP68

If the machine becomes disabled, it must not be towed or otherwise moved on its tracks.The machine should be made safe, lifted onto a transporter and moved to a location where maintenance can be carried out.

Lifting points have been provided on the machine as follows:

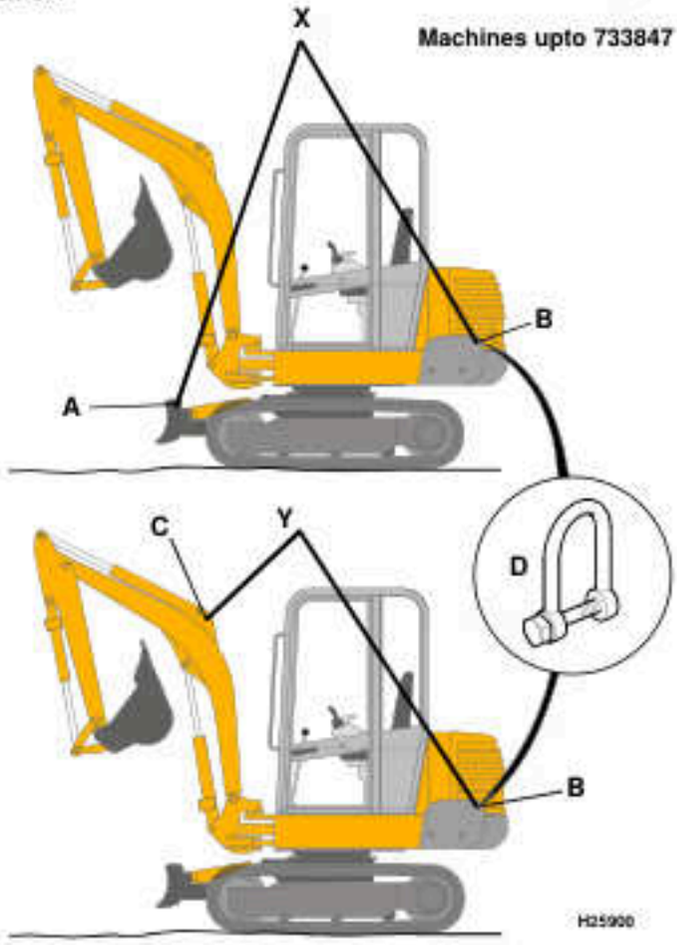
1 On each end of the dozer blade at points **A**.
2 On each side of the counterbalance weights at points **B** using shackles **D**.
3 On the boom at point **C.**

The correct method for 4-point (**X**) , 3-point (**Y** and **Z**) lifting is shown in the illustrations opposite.

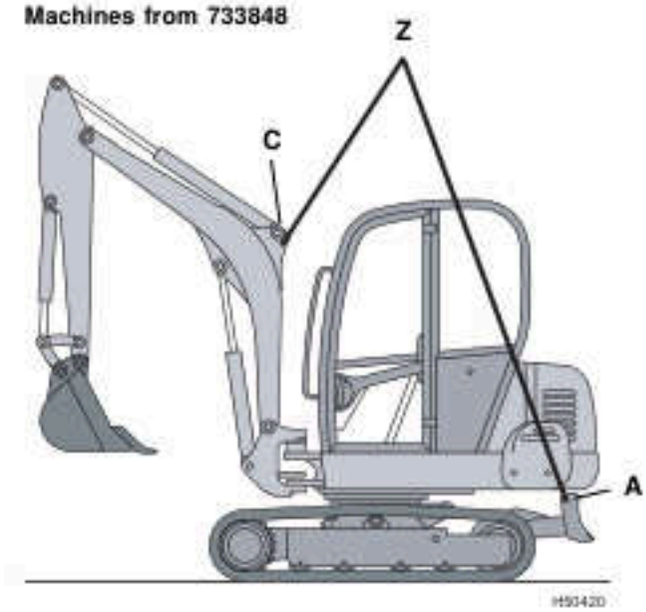
When the machine is totally disabled, the boom should be set to the fully raised position and lifted using the 3-point lifting method.

Secure the machine on the transporter as detailed in the ***Securing the machine***.

Machines upto 733847



Machines from 733848



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Main Harness - 721/10454 Issue 2

802 Super machines from 733001 upto 733847

MA	MAXI-FUSE			AY
TERM	WIRE	SIZE	DEST	TYPE
1	200G	6.0	MB 1	-
2	310D	6.0	S1	-

MB	STARTER SOLENOID			-
TERM	WIRE	SIZE	DEST	TYPE
1	200Q	6.0	MA 1	A,BP

MC	STARTER SOLENOID			
TERM	WIRE	SIZE	DEST	TYPE
1	004	3.0	MX 3	C,D

MD	ALTERNATOR			N,P
TERM	WIRE	SIZE	DEST	TYPE
1	310S	4.0	S1	R
2	310T	4.0	S1	R
3	407	1.0	MB 6	S

ME	TEMP SENDER			
TERM	WIRE	SIZE	DEST	TYPE
1	406B	1.0	S8	BH,BG

MF	EARTH RING			-
TERM	WIRE	SIZE	DEST	TYPE
1	600	6.0	S5	M,K

MG	FUEL CUT-OFF			-
TERM	WIRE	SIZE	DEST	TYPE
1	106AS	1.0	S12	A,D

MH	GLOW PLUG			-
TERM	WIRE	SIZE	DEST	TYPE
1	003E	4.0	S9	L,K

MJ	OIL PRESSURE			-
TERM	WIRE	SIZE	DEST	TYPE
1	403B	1.0	S10	G,H

MK	WORKLIGHTS CONN			AB,AC
TERM	WIRE	SIZE	DEST	TYPE
1	116	2.0	MS 6U	Z,AA
2	872C	1.0	S7	V,W

ML	FUEL SENDER			AZ,BA
TERM	WIRE	SIZE	DEST	TYPE
1	408	1.0	MY 4	BB,BC
2	600CE	1.0	S5	BB,BC

MM	BOOM LIGHT			AB,AC
TERM	WIRE	SIZE	DEST	TYPE
1	872D	1.0	S7	V,W
2	600AV	1.0	S5	V,W

MN	HORN			AZ,BA
TERM	WIRE	SIZE	DEST	TYPE
1	814	1.0	M2 2	BB,BC
2	600EY	1.0	S5	BB,BC

MP	CAB CONNECTOR			X,Y
TERM	WIRE	SIZE	DEST	TYPE
1	304/208	1.0	S2	V,W
2	832	1.0	MT 5	V,W
3	102/217	1.0	S13	V,W
4	833	1.0	MT 7	V,W
5	-	-	-	AJ
6	45	1.0	MT 1	V,W
7	600N	1.4	S5	Z,AA
8	600AR/R	2.0	S5	Z,AA

MR	2 SPEED DOZER LEVER			AB,AC
TERM	WIRE	SIZE	DEST	TYPE
1	156D	1.0	S4	V,W
2	889	1.0	NK A	V,W

MS	FUSE BOX			AG,AH
TERM	WIRE	SIZE	DEST	TYPE
1	001A	2.0	S6	BE
1U	106E	1.0	S12	BD
2	310G	2.0	S1	BE
2U	304A	1.0	S2	BD
3	001D	2.0	S8	BE
3U	303B/1U	1.0	NO 1	BD
4	001B	2.0	S6	BE
4U	102	2.0	S13	BE
5	001E	2.0	S8	BE
5U	156	2.0	S4	BE
6	310P	2.0	S1	BE
6U	116	2.0	MK 1	BE

MT	WIPER SWITCH			AM
TERM	WIRE	SIZE	DEST	TYPE
1	45	1.0	MP 6	AP
2	-	-	-	-
3	102B	1.0	S13	AP
4	-	-	-	-
5	832	1.0	MP2	AP
6	-	-	-	-
7	833	1.0	MP 4	AP
8	-	-	-	-

MU	BLOWER SWITCH			AM
TERM	WIRE	SIZE	DEST	TYPE
1	800	1.4	NE 1	AP
2	-	-	-	-
3				
4	-	-	-	-
5	102A	1.4	S13	AP
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

MV	BOOM LIGHTS			AK
TERM	WIRE	SIZE	DEST	TYPE
1	872A	1.0	S7	AP
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	156E	1.0	S4	AP
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	872B	0.6	S7	AN
10	600DW	0.6	S5	AN

MX	IGNITION SWITCH			BR,BS
TERM	WIRE	SIZE	DEST	TYPE
1	310A	6.0	S1	BM
2				
3	004	3.0	MC 1	BM
4				
5	001	3.0	S6	BN
6	001C	3.0	S6	BN
7	003A	4.0	MX 8	AR
8	003A	4.0	MX 7	AR
9	003B	4.0	S9	AR

MY	INSTRUMENT PANEL			AT
TERM	WIRE	SIZE	DEST	TYPE
1	106	0.6	S12	AU
2	600T	0.6	S5	AU
3	-	-	-	-
4	408	1.0	ML 1	AU
5	-	-	-	-
6	106D	0.6	S12	AU
7	403A	0.6	S10	AU
8	003F	0.6	S9	AU
9	434	0.6	NB 3	AU
10	406A	0.6	S8	AU
11	402A	0.6	S11	AU
12	-	-	-	-

MZ	HORN BUTTON			
TERM	WIRE	SIZE	DEST	TYPE
1	304B	1.0	S2	A,D
2	814	1.0	MN 1	A,D

NB	DIODE CONNECTOR			T,U
TERM	WIRE	SIZE	DEST	TYPE
1	406	1.0	S8	V,W
2	403	0.6	S10	V,W
3	434	0.6	MY 9	V,W
4	402	0.6	S11	V,W
5	411	0.6	NC 2	V,W
6	407	1.0	MD 3	V,W

NC	BUZZER			-
TERM	WIRE	SIZE	DEST	TYPE
1	106C	0.6	S12	A,D
2	411	0.6	NB 5	E,F

ND	BEACON FEED			-
TERM	WIRE	SIZE	DEST	TYPE
1	303B/1U	1.0	MS 3U	A,D
2	600CZ/4B	1.0	S5	A,D

NE	HEATER			-
TERM	WIRE	SIZE	DEST	TYPE
1	800	1.4	MU 1	B,D
2	600BH	1.4	S5	B,D

NF	AUX. POWER			-
TERM	WIRE	SIZE	DEST	TYPE
1	156F	1.4	S4	B,D
2	600CC	1.4	S5	B,D

NH	SLEW SWING SWITCH			-
TERM	WIRE	SIZE	DEST	TYPE
1	3/156A	1.0	S4	A,D,E
2	4/958	1.0	S3	A,D,E
3	1/600MC	1.0	S5	A,D,E

NJ	MICRO SWITCH			AB,AC
TERM	WIRE	SIZE	DEST	TYPE
1	156C	1.0	S4	V,W
2	980	1.0	NR A	V,W

NK	2 SPEED SOLENOID			AF
TERM	WIRE	SIZE	DEST	TYPE
A	889	1.0	MR 2	BJ,BK
B	600KY	1.0	S5	BJ,BK

NL	SWING SOLENOID 1			AF
TERM	WIRE	SIZE	DEST	TYPE
A	958A	1.0	S3	BJ,BK
B	600GE	1.0	S5	BJ,BK

NM	SWING SOLENOID 2			AF
TERM	WIRE	SIZE	DEST	TYPE
A	958B	1.0	S3	BJ,BK
B	600GF	1.0	S5	BJ,BK

NR	PILOT SOLENOID			AF
TERM	WIRE	SIZE	DEST	TYPE
A	980	1.0	NJ 2	BJ,BK
B	600JR	1.0	S5	BJ,BK

NS	AIR FILTER			AV
TERM	WIRE	SIZE	DEST	TYPE
1	402B	1.0	S11	AW,AX
2	600CF	1.0	S5	AW,AX

S1	SPLICE	AD,AE
WIRE	SIZE	DEST
310A	6.0	MX 1
310D	6.0	MA 2
310G	2.0	MS2
310P	2.0	MS 6
310S	4.0	MD 1
310T	4.0	MD 2

S2	SPLICE	AD,AE
WIRE	SIZE	DEST
304A	1.0	MS 2U
304B	1.0	MZ 1
304/208	1.0	MP 1

S3	SPLICE	AD,AE
WIRE	SIZE	DEST
4/958	1.0	NH 2
958A	1.0	NL A
958B	1.0	NM A

S4	SPLICE	AD,AE
WIRE	SIZE	DEST
156	2.0	MS 5U
3/156A	1.0	NH 1
156C	1.0	NJ 1
156D	1.0	MR 1
156E	1.0	MV 5
156F	1.4	NF 1

S5	SPLICE	AD,AE
WIRE	SIZE	DEST
600	6.0	MF 1
600N	1.4	MP 7
600T	0.6	MY 2
600AR/R	2.0	MP 8
600AV	1.0	MM 2
600BH	1.4	NE 2
600CC	1.4	NF 2
600CE	1.0	ML 2
600CF	1.0	NS 2
600CZ/4B	1.0	ND 2
600DW	0.6	MV 10
600EY	1.0	MN 2
600GE	1.0	NL B
600GF	1.0	NM B
600JR	1.0	NR B
600KY	1.0	NK B
1/600MC	1.0	NH 3

S6	SPLICE	AD,AE
WIRE	SIZE	DEST
001	3.0	MX 5
001A	2.0	MS 1
001B	2.0	MS 4
001C	3.0	MX 6
001D	2.0	MS 3
001E	2.0	MS 5

S7	SPLICE	AD,AE
WIRE	SIZE	DEST
872A	1.0	MV 1
872B	0.6	MV 9
872C	1.0	MK 2
872D	1.0	MM 1

S8	SPLICE	AD,AE
WIRE	SIZE	DEST
406	1.0	NB 1
406A	0.6	MY 10
406B	1.0	ME 1

S9	SPLICE	AD,AE
WIRE	SIZE	DEST
003B	4.0	MX 9
003E	4.0	MH 1
003F	0.6	MY 8

S10	SPLICE	AD,AE
WIRE	SIZE	DEST
403	0.6	NB 2
403A	0.6	MY 7
403B	1.0	MJ 1

S11	SPLICE	AD,AE
WIRE	SIZE	DEST
402	0.6	NB 4
402A	0.6	MY11
402B	1.0	NS 1

S12	SPLICE	AD,AE
WIRE	SIZE	DEST
106	0.6	MY 1
106C	0.6	NC 1
106D	0.6	MY 6
106E	1.0	MS 1U
106AS	1.0	MG 1

S13	SPLICE	AD,AE
WIRE	SIZE	DEST
102	2.0	MS 4U
102/217	1.0	MP 3
102A	1.4	MU 5
102B	1.0	MT 3

712306 (721/10454 Iss 2)

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